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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/664,708	09/17/2003	Michael Allen Bryner	TK3690USNA	4383

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EXAMINER	
PIZIALI, ANDREW T	

ART UNIT	PAPER NUMBER
1771	

MAIL DATE	DELIVERY MODE
06/05/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/664,708	BRYNER, MICHAEL ALLEN	
	Examiner	Art Unit	
	Andrew T. Piziali	1771	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 April 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 4-24* is/are pending in the application.

4a) Of the above claim(s) *15 and 17-22* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4-14,16,23 and 24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *9/17/03 & 1/16/04* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The amendment filed on 4/19/2007 has been entered.

Claim Rejections - 35 USC § 102/103

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 4-7, 12-14, 16, 23 and 24 are rejected under 35 U.S.C. 102(a) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Advancing Techniques in Electrospinning Fibers to Doshi.

Regarding claims 1, 4-7, 12-14, 16, 23 and 24, Doshi discloses a nonwoven fabric having a support layer and a barrier layer formed from nanodenier filaments (see entire document). Doshi discloses that the barrier layer fiber diameters may be 50 nanometers (0.05 micrometer). Doshi discloses that the barrier layer fiber material may be nylon 66. Doshi discloses that the fabric may be subjected to point bonding. Doshi discloses that the basis weight of the fabric may be varied. Doshi discloses that the fabric possesses improved hydrohead performance. Doshi discloses that the fabric is useful as a barrier in filtration applications.

Although Doshi does not appear to explicitly teach the claimed hydrohead value or Frazier permeability, it is reasonable to presume that said limitations are inherent to the invention. Support for said presumption is found in the use of similar materials (i.e. nylon nanofiber barrier layer) and in the similar production steps (i.e. bonding to a substrate layer) used to produce the nonwoven fabric. The burden is upon the applicant to prove otherwise. In addition, the claimed limitations are readily obtainable through routine experimentation with variables such as fiber material, fiber diameter, basis weight, solids fraction, maximum pore size, and because it is understood by one of ordinary skill in the art that discovering an optimum value of a result effective variable involves only routine skill in the art. It is noted that Doshi specifically teaches that the material is made in order to create a barrier layer with improved hydrohead.

Regarding claims 5 and 6, Doshi discloses that the barrier layer basis weight may be between 8 and 17 gsm (Table 1).

Regarding claim 7, Doshi discloses using nylon 66 nanofiber material.

Regarding claim 12, considering that pore size is proportional to fiber diameter (see current specification page 8, lines 10-15), and considering that Doshi discloses that the barrier layer fiber diameters may be 50 nanometers (0.05 micrometer), it appears that the fabric disclosed by Doshi inherently possesses the claimed pore size.

Regarding claim 13, Doshi does not appear to mention a solids fraction value for the barrier fabric, but Doshi does disclose that the fabric may be thermal point bonded . Considering that calendering increases solids fraction (see page 15, lines 12-22 of the current specification), it is reasonable to presume that Doshi inherently meets this limitation. In addition, it would have been obvious to one having ordinary skill in the art at the time the invention was made to vary the solids fractions because it is understood by one of ordinary skill in the art that the solids fraction affects hydrohead and because it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

Regarding claim 14, it is reasonable to presume Doshi inherently meets this limitation because of the use of similar materials and similar methods. Alternatively, the claimed limitations are readily obtainable through routine experimentation because it is understood by one of ordinary skill in the art that discovering an optimum value of a result effective variable involves only routine skill in the art.

Regarding claim 16, Doshi discloses the nanofiber barrier layer may be bonded to a spunbonded support layer.

Regarding claims 23 and 24, Doshi discloses that the support web fiber diameters may be less than about 13 micrometers.

Claim Rejections - 35 USC § 103

5. Claims 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Advancing Techniques in Electrospinning Fibers to Doshi in view of USPN 6,706,086 to Emig.

Doshi discloses that the barrier web material may be nylon, but Doshi does not appear to mention the use of other materials. Emig discloses that it is known in the art to make a nanofiber barrier layer out of nylon or polypropylene or the like (see entire document including column 4, lines 5-20). It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the nanofiber material from any suitable material, such as polypropylene, because it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability and desired characteristics.

6. Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Advancing Techniques in Electrospinning Fibers to Doshi in view of USPN 6,746,517 to Benson.

Doshi does not appear to teach adding a hydrophobic coating material, but Benson is also directed to a nanodenier fiber fabric useful in filter media (Abstract). Benson teaches that adding a hydrophobic coating to the nanofibers is preferable, and such a coating is typically fluorocarbon containing (column 12, lines 47-67). It would have been obvious to a person having ordinary skill in the art at the time of the invention to add fluorocarbon coating to the material of Doshi, motivated by a desire to improve filtration properties.

7. Claims 1, 4-9, 12-14, 16, 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent Application Publication 2003/0129909 to Zucker in view of Advancing Techniques in Electrospinning Fibers to Doshi.

Regarding claims 1, 4-9, 12-14, 16, 23 and 24, Zucker discloses a nonwoven fabric having a support layer and a barrier layer formed from nanodenier filaments (paragraph 9). Zucker discloses that the barrier layer fiber diameters are preferably less than 500 nanometers (0.5 micrometer) (paragraph 9). Zucker discloses that the barrier layer fiber material may be polypropylene (paragraph 9). Zucker discloses that the amount of point bonding (solids fraction) may be varied from 10 to 40 percent (paragraph 20). Zucker discloses that the basis weight of the fabric may be varied (paragraphs 1, 14 and 29). Zucker discloses that the pore size may be varied (paragraph 29). Zucker discloses that the fabric possesses improved hydrohead performance (paragraph 9). Zucker discloses that the fabric is useful as a barrier in disposable hygiene applications and filtration (paragraph 14).

Zucker does not appear to teach the claimed basis weight, but Doshi discloses that it is known in the art to use a barrier layer basis weight of between 8 and 17 gsm (Table 1). It would have been obvious to a person having ordinary skill in the art at the time of the invention to use a barrier layer with a basis weight between 8 and 17 gsm in the fabric of Zucker, motivated by a desire to obtain an optimal amount of hydrostatic head.

Zucker uses a spunbonded fabric for a support layer (claim 5) but does not appear to disclose the diameter of the fibers in that layer. Doshi discloses that it is known in the art to make a support web fiber less than about 13 micrometers. Since Zucker is silent to the diameter of the support layer fibers, it would have been necessary, and therefore obvious to a person

having ordinary skill in the art at the time of the invention to use spunbonded fibers having a diameter of less than 10 micrometers in order to provide a support layer that is sufficient for filtration purposes.

It is reasonable to presume that the claimed hydrohead value and Frazier permeability are inherent to the invention taught by the applied prior art. Support for said presumption is found in the use of similar materials (i.e. polypropylene nanofiber barrier layer) and in the similar production steps (i.e. bonding to a substrate layer) used to produce the nonwoven fabric. The burden is upon the applicant to prove otherwise. In addition, the claimed limitations are readily obtainable through routine experimentation with variables such as fiber material, fiber diameter, basis weight, solids fraction, maximum pore size, and because it is understood by one of ordinary skill in the art that discovering an optimum value of a result effective variable involves only routine skill in the art. It is noted that Zucker specifically teaches that the material is made in order to create a barrier layer with improved hydrohead (paragraph 9).

Regarding claims 7-9, Zucker discloses using polyolefin in the nanofibers, including propylene and ethylene units (paragraph 10).

Regarding claim 12, considering that pore size is proportional to fiber diameter (see current specification page 8, lines 10-15), and considering that Zucker discloses that the barrier layer fiber diameters are preferably less than 500 nanometers (0.5 micrometer) (paragraph 9), it appears that the fabric disclosed by Zucker inherently possesses the claimed pore size. In addition, Zucker discloses that the prior art barrier layers created pore size distributions in the 7 to 12 micron range and 10 to 15 micron ranges (paragraph 6). Since the aim of Zucker is to produce an improved barrier fabric, it is reasonable to assume that the pore size distribution in

the barrier layer is improved over the prior art. Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to provide pore sizes of no more than 12 micrometers, motivated by a desire to provide an improved barrier layer.

Regarding claim 13, Zucker does not appear to mention a solids fraction value for the barrier fabric, but Zucker does disclose that the amount of calendering point bonding may be varied from 10 to 40 percent (paragraph 20). Considering that calendering increases solids fraction (see page 15, lines 12-22 of the current specification), it is reasonable to presume that Zucker inherently meets this limitation. In addition, it would have been obvious to one having ordinary skill in the art at the time the invention was made to vary the solids fractions because it is understood by one of ordinary skill in the art that the solids fraction affects hydrohead and because it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

Regarding claim 14, it is reasonable to presume that Zucker inherently meets this limitation because of the use of similar materials and similar methods. Alternatively, the claimed limitations are readily obtainable through routine experimentation because it is understood by one of ordinary skill in the art that discovering an optimum value of a result effective variable involves only routine skill in the art.

Regarding claim 16, Zucker discloses the nanofiber barrier layer is bonded to a spunbonded support layer (claim 5).

8. Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent Application Publication 2003/0129909 to Zucker in view of Advancing Techniques in Electrospinning Fibers to Doshi in view of USPN 6,746,517 to Benson.

Zucker does not appear to teach adding a hydrophobic coating material, but Benson is also directed to a nanodenier fiber fabric useful in filter media (Abstract). Benson teaches that adding a hydrophobic coating to the nanofibers is preferable, and such a coating is typically fluorocarbon containing (column 12, lines 47-67). It would have been obvious to a person having ordinary skill in the art at the time of the invention to add fluorocarbon coating to the material of Zucker, motivated by a desire to improve filtration properties.

Response to Arguments

9. Applicant's arguments filed 4/19/2007 have been fully considered but they are not persuasive.

The applicant asserts that Zucker never comments on the results of combining a barrier layer with a breathable substrate layer. The examiner respectfully disagrees. Zucker discloses that such a combination would result in a reduction in hydrostatic head failures (paragraph 5), improved barrier performance (paragraph 8), a reduction in weight (paragraph 9), and/or an alternative to various performance enhancing coatings or treatments (paragraph 9).

The applicant asserts that Zucker fails to teach or suggest that decreasing the fiber size results in increased hydrohead and decreased air permeability. The applicant appears to be arguing unexpected results. The examiner respectfully disagrees. Doshi discloses that air permeability decreases with the incorporation of nanofibers, therefore, it would be expected that

the hydrohead (ability of a fabric to prevent water penetration) would increase with the incorporation of nanofibers.

The applicant asserts that Zucker fails to teach or suggest that basis weight, solids fraction, fiber size, or pore size are result effective variables. The examiner respectfully disagrees. Firstly, Zucker discloses that the barrier layer fiber diameters are preferably less than 500 nanometers (0.5 micrometer) (paragraph 9). Therefore, it appears that the fiber diameters do not need to be varied. Secondly, Zucker discloses that the barrier layer fiber material may be polypropylene (paragraph 9). Therefore, it appears that the fiber material does not need to be varied. Thirdly, Zucker discloses that the amount of point bonding (solids fraction) may be from 10 to 40 percent (paragraph 20). Therefore, it appears that the solids fraction does not need to be varied. Fourthly, Zucker does not appear to specifically mention the claimed pore size, but considering that pore size is proportional to fiber diameter (see current specification page 8, lines 10-15), and considering that Zucker discloses that the barrier layer fiber diameters are preferably less than 500 nanometers (0.5 micrometer) (paragraph 9), it appears that the fabric disclosed by Zucker inherently possesses the claimed pore size. Therefore, it appears that the pore size does not need to be varied. Fifthly, Zucker discloses that the basis weight of the fabric may be varied (paragraphs 1, 14 and 29). Finally, Zucker discloses that the fabric is suppose to possesses improved hydrohead performance (paragraph 9) and that the fabric is useful as a barrier in disposable hygiene applications and filtration (paragraph 14). Therefore, the claimed limitations are readily obtainable through routine experimentation motivated by a desire to obtain an optimum value of a result effective variable.

The applicant asserts that the examiner's rejection is merely an "obvious to try" standard of obviousness and that such a standard is improper. The examiner respectfully disagrees. Firstly, the examiner contends that motivation exists (optimize result effective variables) to modify the variables. Secondly, The Supreme Court of the United States ruled that a patent claim could be proved obvious merely by showing that the combination of elements was obvious to try. See KSR vs. Teleflex.

Conclusion

10. Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew T. Piziali whose telephone number is (571) 272-1541. The examiner can normally be reached on Monday-Friday (8:00-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on (571) 272-1478. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

5/21/07

ANDREW PIZIALI
PRIMARY EXAMINER

atp